

Amendment to Claims

1 1. (Original). A method of combining data to arrive at a composite graphical
2 representation of a construction site comprising, the steps of:
3 providing subsurface mapping data;
4 creating a subsurface model of subsurface features from the subsurface mapping
5 data;
6 creating a wire frame model of an above surface feature;
7 overlaying the wire frame model with a pictorial representation of the above
8 surface feature; and
9 combining the wire frame model with the subsurface model to produce the
10 composite graphical representation.

1 2. (Original). The method of claim 1 wherein the subsurface mapping data is
2 resistivity data.

1 3. (Original). The method of claim 2 wherein the resistivity data is taken from an
2 AGI SuperSting program.

1 4. (Original). The method of claim 2 further comprising the step of removing a
2 statistical outlier from the resistivity data.

1 5. (Original). The method of claim 4 wherein a word processing program is used to
2 remove the outlier.

1 6. (Original). The method of claim 5 wherein the word processing program is
2 WORDPAD.

1 7. (Original). The method of claim 2 further comprising the step of performing a
2 least squares data inversion analysis on the resistivity data.

1 8. (Original). The method of claim 7 wherein the least squares data inversion
2 analysis is preformed by a RES3DINV program.

1 9. (Original). The method of claim 7 wherein the least squares data inversion
2 analysis is performed by a RES2DINV program.

1 10. (Original). The method of claim 2 further comprising the step of performing a
2 kriging analysis on the resistivity data.

1 11. (Original). The method of claim 10 wherein the analysis is preformed by
2 SURFER software.

1 12. (Original). The method of claim 2 further comprising the step of performing a
2 cokriging analysis on the resistivity data.

1 13. (Original). The method of claim 1 wherein the subsurface mapping data is ground
2 penetrating radar data.

1 14. (Original). The method of claim 13 wherein the ground penetrating radar data is
2 acquired through a SIR-3000 ground penetrating radar system.

1 15. (Original). The method of claim 13 wherein the data is enhanced.

1 16. (Original). The method of claim 15 wherein the program Radan is used to
2 enhance the data.

1 17. (Original). The method of claim 1 wherein the subsurface mapping data is
2 seismic data.

1 18. (Original). The method of claim 17 wherein the seismic data is acquired from a
2 SmartSeis seismic imaging system.

1 19. (Original). The method of claim 17 wherein the data is enhanced.

1 20. (Original). The method of claim 19 wherein the program SizeImager is used to
2 enhance the data.

1 21. (Original). The method of claim 1 wherein the wire frame model is created using
2 AUTOCAD software.

1 22. (Original). The method of claim 1 wherein the wire frame model includes
2 a model of vegetation.

1 23. (Original). The method of claim 1 wherein the wire frame model includes
2 a model of a building.

1 24. (Original). The method of claim 1 wherein the pictorial representation is
2 an aerial photograph.

1 25. (Original). The method of claim 24 wherein the aerial photograph is
2 imported into EVS software.

1 26. (Original). The method of claim 1 wherein the subsurface model
2 comprises at least one 2-dimensional graph.

1 27. (Original). The method of claim 1 wherein the subsurface model
2 comprises at least one 3-dimensional graph.

1 28. (Original). The method of claim 1 wherein the composite graphical
2 representation is produced in Visual Reduction Modeling Language.

1 29. (Original). The method of claim 28 wherein the graphical representation
2 is viewed as a web page.

1 30. (Original). The method of claim 1 comprising the further step of
2 displaying the composite graphical representation.

1 31. (Original). The method of claim 1 wherein the composite graphical
2 representation can be rotated.

1 32. (Original). The method of claim 1 wherein the pictorial representation is a
2 representation of texture.

1 33. (Original). The method of claim 1 including the additional step of
2 viewing a 2-dimensional slice of the composite graphical representation.

1 34. (Original). The method of claim 1 wherein the graphical representation is
2 used in a .AVI file.

1 35. (Original). The method of claim 1 wherein the wire frame model includes
2 below surface ground structures.

1 36. (Original). A 3-dimensional model of a construction site comprising:
2 a graphical model of subsurface mapping data;
3 a spatial model of an above ground object; and
4 a 2-dimensional image of the above ground object superimposed on the
5 spatial model and spatially synchronized with the graphical model of resistivity data.

1 37. (Original). The 3-dimensional model of claim 36 wherein the graphical
2 model is prepared using kriging.

1 38. (Original). The 3-dimensional model of claim 36 wherein the spatial
2 model is prepared using AUTOCAD.

1 39. (Original). The 3-dimensional model of claim 36 wherein the 3-
2 dimensional model is rendered in Visual Reduction Modeling Language.

1 40. (Original). The 3-dimensional model of claim 36 wherein the subsurface
2 mapping data is resistivity data.

1 41. (Original). The 3-dimensional model of claim 40 wherein the resistivity
2 data includes data related to moisture content.

1 42. (Original). The 3-dimensional model of claim 40 wherein the resistivity
2 data includes data related to a void.

1 43. (Original). The 3-dimenstional model of claim 40 wherein the resistivity
2 data includes data related to a subsurface anomaly.

1 44. (Original). The 3-dimenstional model of claim 40 wherein the resistivity
2 data is derived through use of the equation:

3 $R = (V/I)K$;
4 where K is an electrode geometric constant;
5 R is resistance;
6 V is voltage; and
7 I is current.

1 45. (Original). The 3-dimensional model of claim 36 wherein the subsurface
2 mapping data is ground penetrating radar data.

1 46. (Original). The 3-dimensional model of claim 36 wherein the subsurface
2 mapping data is seismic data.

1 47. (Original). A method of creating a graphical model comprising the steps
2 of:
3 testing to determine subsurface mapping data;
4 enhancing the data;
5 constructing a wire frame model of an above ground structure;
6 providing a pictorial representation of a plan view of the above ground
7 structure;
8 combining the pictorial representation with the wire frame model;
9 aligning the subsurface mapping data with the combined pictorial
10 representation and wire frame model; and

11 merging the subsurface mapping data with the combined pictorial
12 representation and wire frame model.

1 48. (Original). The method of claim 47 wherein the subsurface mapping data
2 is resistivity data.

1 49. (Original). The method of claim 48 wherein the data is enhanced by
2 performing a least squares data inversion analysis on the subsurface mapping data.

1 50. (Original). The method of claim 48 wherein the data is enhanced by
2 performing a kriging analysis on the subsurface mapping data.

1 51. (Presently Amended). The method of claim ~~50~~ 47 wherein the step of
2 testing includes choosing a placement for electrodes.

1 52. (Presently Amended). The method of claim ~~50~~ 51 wherein the placement
2 is the Wenner arrangement.

1 53. (Original). The method of claim 51 wherein the placement is the
2 Schlumberger arrangement.

1 54. (Original). The method of claim 51 wherein the placement is the dipole
2 dipole arrangement.

1 55. (Original). The method of claim 47 wherein the step of combining is
2 carried out with AUTOCAD software.

1 56. (Original). The method of claim 47 wherein the step of merging is carried
2 out with EVS software.

1 57. (Original). The method of claim 47 wherein the step of merging results in
2 a VRML file.

1 58. (Original). The method of claim 47 further comprising the step of visually
2 displaying the merged subsurface mapping data, combined pictorial representation and
3 wire frame model.

1 59. (Original). The method of claim 58 wherein the pictorial representation
2 can be rotated.

1 60. (Original). The method of claim 47 wherein the step of merging results in
2 an HTML file.

1 61. (Original). The method of claim 47 wherein the subsurface mapping data
2 is ground penetrating radar data.

1 62. (Original). The method of claim 61 wherein the program Radan is used to
2 enhance the data.

1 63. (Original). The method of claim 47 wherein the subsurface mapping data
2 is seismic data.

1 64. (Presently Amended). The method of claim ~~64~~ 63 wherein the program
2 SizeImager is used to enhance the data.

1 65. (Original). The method of claim 48 wherein the wire frame model
2 includes below ground structures.